Estuary Feasibility Study for Capitol Lake

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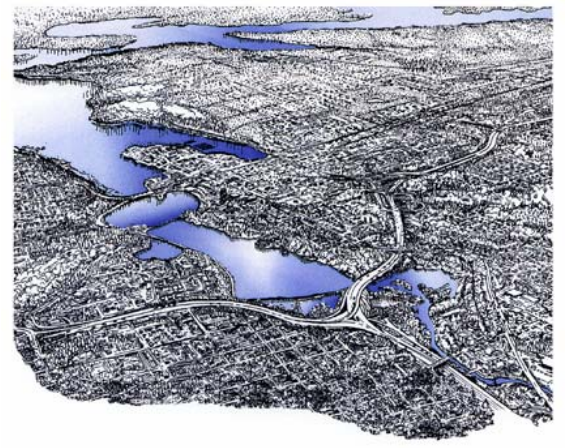
In the Beginning … it was a Tideflat

Capitol Lake was created over 50 years ago from the southernmost part of Budd Inlet. Part of the tideflats of Olympia and Tumwater were converted into a fresh water reservoir now called Capitol Lake. As the mouth of the Deschutes River, most of central Thurston County and some of eastern Lewis County drain into Capitol Lake.

There were most likely several reasons for creating Capitol Lake. In downtown Olympia there was an area called "Little Hollywood" where families inhabited shellfish culling sheds, riding up and down the tides twice a day. Urban renewal may have been one reason. Fulfillment of the state capitol group drawing prepared by Wilder and White in 1911 was possibly another. That image shows the capitol grounds and building above a body of water which is either a lake or the inlet at high tide. Another reason may have been the legislature's self interest. A resident of Olympia today cannot comprehend the true meaning of the term "stinking mudflats" until the first (primary) sewage treatment plant was constructed in 1956, several years after the lake. Whatever the cause, the state legislature authorized the creation of Capitol Lake in 1938 and funded it a decade later.

Originally called the "Des Chutes Basin Project", the legislature directed the Washington Department of General Administration (GA) to buy land, construct a dam, and build a road or railroad around the basin. The construction was complete in 1951 and the new roadway connected downtown Olympia with downtown Tumwater, before the advent of Interstate 5 or State Route 101.



Capitol Lake and southern Budd Inlet in Olympia and Tumwater, Washington.
Thurston Regional Planning Council

A Community Asset

Swimming, walking and waterfront parks - the community benefits of Capitol Lake were apparent early on. While Deschutes Parkway provides community infrastructure, its the numerous parks and recreational amenities which both residents and visitors appreciate. Olympia's "Lakefair" community celebration started in 1957. The event occurred in Capitol Lake Park, which is now part of a larger Heritage Park. In Tumwater, a park was created at the base of Tumwater Falls and the old Brew House with a historical theme. All of these facilities are either on state owned lands or are part of the State Capitol Campus.

Over the years unanticipated problems began to cause difficulties for the managers of Capitol Lake. As early as 1975, the *"Save a Beautiful Lake"* program identified the need to address sediment in the lake. Dredging portions of the lake occurred in 1979 and 1986, but an annual maintenance dredging program was never fully funded or enacted. Over time water quality became a problem which led to the closure of the swimming beach in the mid-1980's. In addition to the upstream sources of non-point pollution, the Washington State Department of Fisheries (WDFW) decided to raise Chinook fingerlings in Percival Cove as part of their hatchery program. Water quality is still a problem in the basin and the focus of a Total Maximum Daily Loading (TMDL) study currently underway by the Washington Department of Ecology.

In the mid-1990's plans for dredging the lake were dropped and increasing conflicts between habitat and human uses resulted in difficulties obtaining permits for Heritage Park. As a result the Department of General Administration initiated a process of collaborative lake management - Capitol Lake Adaptive Management Plan (CLAMP) process.

CLAMP Planning

The CLAMP planning process began in 1997 with seven state, tribal and local entities. This was expanded to its current nine jurisdictions early in 1998. Monthly meetings are attended by representatives from the State Departments of General Administration, Ecology, Fish and Wildlife and Natural Resources, Squaxin Island Tribe, cities of Olympia and Tumwater, Thurston County, and the Port of Olympia. An environmental impact statement (EIS) was prepared which evaluated various sediment options, and a two-year management plan was adopted to address a series of data gaps. Even when subsequent reports were complete, the CLAMP Steering Committee found itself unable to reach a consensus decision about the type of long-term aquatic environment for the lake. Some felt that continuing with the lake was the preferred way, while others believed that many of the basin's problems could be traced back to its earlier change from an estuary.

In 2002 the Capitol Lake Adaptive Management Plan - Steering Committee adopted a ten year plan for the basin which addressed a range of fourteen management issues which went beyond water quality and sediment management. The *CLAMP 10 Year Plan* was recommended by the Steering Committee and was adopted by the State Capitol Committee (comprised of the Governor, Lt. Governor, Secretary of State, and Lands Commissioner) with the exception of Management Objective #2 that reads; *"Complete an estuary feasibility study to determine a long-range management decision"*. Consequently, during the life of the plan, the CLAMP

Steering Committee would avoid making management decisions that would preempt selection of a long-term Aquatic Environment. In late 2003, the State Capitol Committee authorized proceeding with the CLAMP estuary feasibility study.

Crafting the Study Plan

The CLAMP entities spent about a year determining the details of an "estuary feasibility study". During that time guidance was sought from the U.S. Army Corps, the Puget Sound Nearshore Estuary Restoration Program (PSNERP), and a consultant was hired to determine what a Corps-sponsored scope of work might include. In the end it was Bob Barnard from the Washington Department of Fish and Wildlife (WDFW) who crafted the four-page scope of work for the CLAMP Estuary Feasibility Study.

The year spent on collectively developing the scope of work was not wasted time, because the CLAMP Steering and Technical Committees learned that there are many unknowns associated with estuary restoration. The feasibility study also needed to investigate these uncertainties and then identify the costs and benefits of such a restoration. The staff and Steering Committee had to craft a set of goals that articulated the desires of the CLAMP Steering Committee. A key goal was to increase the understanding of "estuaries" to the level which the entities currently have about a lake environment. This was followed by the need to determine if it is possible to recreate a viable, self-sustaining estuary given all the existing physical constraints within the basin.

Other goals were process oriented. Balancing the benefits and costs of various alternative scenarios was left to the "net-benefit analysis", and an independent review process was added to address the perceived bias of the staff. To reassure everyone, it was acknowledged that the CLAMP Steering Committee would be making a recommendation to the State Capitol Committee about a long-term aquatic environment of the basin once the report was complete.

When the State Capitol Committee authorized the feasibility study, they were concerned about the financial resources to undertake the research. The CLAMP Estuary Feasibility Study is estimated to cost about $900,000. To date, $568,240 has been raised by CLAMP entities and other supporting entities such as the Puget Sound Action Team. A grant from the Salmon Recovery Funding Board (SRFB) for $222,000 has been obtained, and an additional $222,000 is being requested by the Washington Department of Fish and Wildlife (WDFW) in the 2005-07 biannual budget for the next phase of the study.

CLAMP Estuary Feasibility Study

The CLAMP Estuary Feasibility Study scope of work contains 12 distinct tasks which are listed below:

1. CLAMP Technical Advisory Committee Review and Steering Committee Oversight
2. CLAMP Conceptual Model of Estuarine Process and Community Values
3. Reference Estuary Survey
4. Bathymetric Survey

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5. Hydraulic and Sediment Transport Model
6. Biological Conditions Report
7. Design and Preliminary Cost Estimates
8. Net Benefit Analysis
9. Report Development
10. Independent Technical Review
11. Community Review
12. Project Management

The Salmon Recovery Funding Board (SRFB) grant, called the ***Deschutes River Estuary Restoration Study*** (DRERS), will address some but not all the estuary feasibility study Tasks. It will focus on data collection and modeling to determine the estuary's future biological conditions. These SRFB grant tasks (from the aforementioned list) are noted below:

1. CLAMP Technical Advisory Committee Review & Steering Committee Oversight
3. Reference Estuary Study
5. Hydraulic and Sediment Transport Analysis and Modeling
6. Biological Conditions Report
10. Independent Technical Review
11. Community Review
12. Project Management

Thurston Regional Planning Council (TRPC) will be project manager for the SRFB grant phase. The US Geologic Survey (USGS) will be working on Task 5 Hydraulic and Sediment Transport Analysis and Modeling. *(NOTE: Please refer to the related paper from Doug George of USGS regarding that work.)*

Consultants will be hired to undertake Task 3 - Reference Estuary Study and Task 6 - Biological Conditions Report. When combined with the hydraulic and sediment data it is hoped that answers might be provided to the following questions:

- What type of estuary will form?
- Will it be self-sustaining and productive?
- How will variations in elevation or circulation pattern affect plant and animal communities?
- What will the estuary look like in the future?

Implications of No Action

The implications of no action have been mounting over the past 50 years. Rivers transport both water and sediment from their watersheds to their mouths. Unfortunately, sediment is often overlooked in this equation. It wasn't until 1974 when concerns were first expressed about sediment reducing the volume of the lake. It is estimated that over 1.8 million cubic yards of material have been deposited in the basin since 1951, resulting in a loss of over 25% of its volume. The 1998 CLAMP EIS estimated a continued life of 100 – 150 years depending upon the sedimentation rates.

In the short term, changes to the lake's appearance may be subtle. The South Basin at the base of Tumwater Falls will fill the fastest, changing from open water to a series of island and river bars. The Middle Basin (north of I-5) will continue to become shallower and some islands may appear during the next 10 years. It is likely that Percival Cove may be cut off from the rest of the lake by sedimentation from Percival Creek. In the North Basin adjacent to Heritage Park there should be few, if any, visual changes due to sedimentation.

Many in the community still believe that the lake should just be dredged. This was the focus of many Capitol Lake studies from the 1970's to the mid-1990's. However, deep water disposal of Capitol Lake sediments is not an option due to the presence of the noxious weed, Purple Loosestrife along the lake shore. Therefore, the cost to remove a year's sedimentation from the lake to an upland disposal site would be about $1 million per year, or about $40 million if all the sediment that has been deposited in the lake since it was created was removed. The trajectory for Capitol Lake is that over time it will change into a very large freshwater marsh.

Study Completion Depends on Funding

Significant progress on the CLAMP Estuary Feasibility Study has been made in just the past two years. But, even with the potential funds from the 2005 legislature, the study will require an additional $110,000. Therefore, the completion date of the study will be entirely dependent on when funds for the final phase are acquired.

While the lack of a "target date" might be seen as a failure by some, others point out that the CLAMP Plan allows a ten year window to complete the study and make a recommendation. Given the fact that it was four decades between Wilder and White's image of the Capitol Campus and when the lake was constructed, completing the feasibility study within the next ten years looks completely reasonable.

It must be noted that a decision to undertake a feasibility study is NOT a decision to make Capitol Lake an estuary. That decision would involve the communities, as well as their elected officials, in order to weigh the benefits and costs of such an action. As noted by General Administration Director, Rob Fukai, ***"We don't know if the estuary is a viable option. Without the research, we will never know."***